Roadmap to a Secure & Resilient Water Sector

Developed by:

Critical Infrastructure Partnership Advisory Council

Water Sector

Strategic Planning Working Group

October 2009

Report Documentation Page

Form Approved
OMB No. 0704-0188

Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
OCT 2009		**00-00-2009 to 00-00-2009**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
Roadmap to a Secure & Resilient Water Sector	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **Critical Infrastructure Partnership Advisory Council ,Water Sector Strategic Planning Workshop Group,Washington,DC**	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			
unclassified	**unclassified**	**unclassified**	**Same as Report (SAR)**	**24**	

Table of Contents

Acknowledgements 1

Top Priorities 3

Implementation 7

Appendix A. Roadmapping Process 9

Appendix B. Summary of Water Sector Risks & CIPAC Priorities 11

Appendix C. Crosswalk of CIPAC Priorities with WSCC Priorities 15

Appendix D. Acronyms 17

Appendix E. References 19

Acknowledgments

The Roadmap to a Secure & Resilient Water Sector was developed by the Critical Infrastructure Partnership Advisory Council Water Sector Strategic Planning Working Group. Leadership for the project was provided by William Komianos, Sr. Director of Operational Risk Management at American Water and David Travers, Director of the Water Security Division at the U.S. Environmental Protection Agency Office of Water, with support from Cade Clark, Director of State Relations at the National Association of Water Companies. Workshop facilitation and document preparation was accomplished by Katie Jereza and Julie Chappell of Energetics Incorporated.

Acknowledgements

The Critical Infrastructure Partnership Advisory Council (CIPAC) Water Sector Strategic Planning Working Group would like to acknowledge everyone who contributed to the development and finalization of the *Roadmap to a Secure and Resilient Water Sector*. In accordance with the National Infrastructure Protection Plan partnership model, the Working Group worked in close collaboration with the individuals identified below and devoted a significant amount of time, energy, and effort to the creation of this roadmap. The Working Group wishes to thank the Department of Homeland Security for its support of the Sector in developing this roadmapping product, a requirement for strengthening the Sector Partnership.

Roadmap Contributors

Cade Clark, National Association of Water Companies *

Peter Cook, National Association of Water Companies

Cynthia Finley, National Association of Clean Water Agencies

Charles Hilton, Breezy Hill Water & Sewer Company, National Rural Water Association*

Elston Johnson, Texas Commission on Environmental Quality

Wes Kleene, Office of Drinking Water, Virginia Department of Health*

William Komianos, Water Sector Coordinating Council Vice-Chair, American Water, NAWC, Working Group Co-Chair*

Everett Lallis, DC Water and Sewer Authority*

John Laws, Department of Homeland Security, Office of Critical Infrastructure Protection, Partnership and Outreach Division*

Aaron Levy, Association of Metropolitan Water Agencies

Kevin Morley, American Water Works Association

Dean Moss, Beaufort-Jasper Water & Sewer Authority*

Nitin Natarajan, U.S. Department of Health and Human Services, Critical Infrastructure Protection Program, Healthcare and Public Health Sector*

Bridget O'Grady, Association of State Drinking Water Administrators

Roy Ramani, Water Environment Research Foundation

Lynn Stovall, American Water Works Association

James Sullivan, Water Environment Federation

Vance Taylor, Association of Metropolitan Water Agencies

Ed Thomas, National Rural Water Association

Patricia Tidwell-Shelton, U.S. Environmental Protection Agency (EPA), Office of Water, Water Security Division

David Travers, U.S. EPA, Office of Water, Water Security Division, Working Group Co-Chair*

*Indicates CIPAC Water Sector Strategic Planning Working Group Member

Top Priorities

Introduction

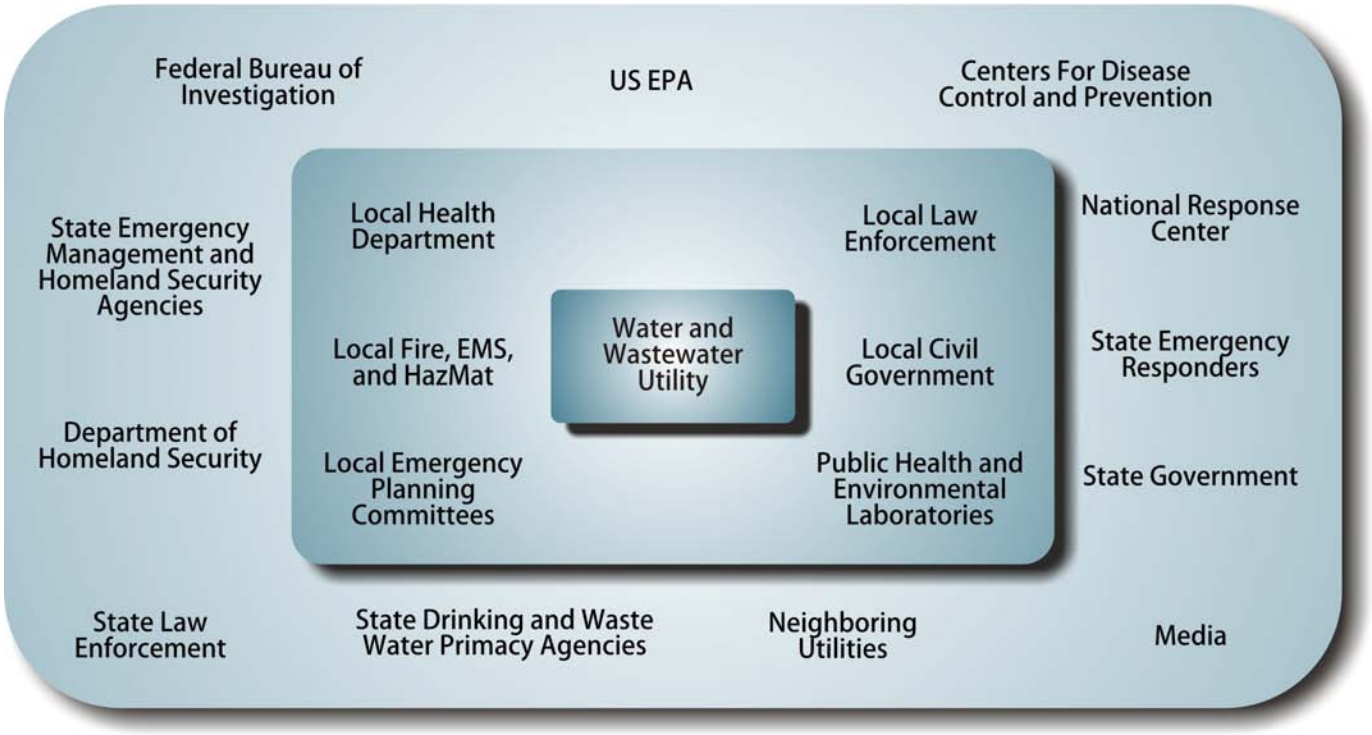
Water and wastewater infrastructure (Water Sector) protection is a shared responsibility. The Water Government Coordinating Council (WGCC) is chaired by the U.S. Environmental Protection Agency (EPA) and made up of representatives from federal, regional, state, local, and tribal government programs. The Water Sector Coordinating Council (WSCC) members include municipal and investor owned water and wastewater utilities, associations, and regional organizations. Together, these coordinating councils form the public-private partnership through which security partners collaborate to plan and implement programs aimed at achieving a common vision.[1]

As illustrated in Figure 1.1, the number and scope of partners in responding to a catastrophic event can be significant. The figure includes local responders in the inner circle, with federal, state, and regional partners in the outer circle.[2] To guide future efforts, the Water Sector has developed two roadmaps designed to align security partner efforts and ensure security needs are addressed in a timely and efficient manner.

The Water Sector's security vision is a secure and resilient drinking water and wastewater infrastructure that provides clean and safe water as an integral part of daily life. This Vision assures the economic vitality of and public confidence in the Nation's drinking water and wastewater through a layered defense of effective preparedness and security practices in the sector.

In October 2008, the WSCC released the *WSCC Strategic Roadmap*, which reflects the WSCC's needs and priorities for reducing infrastructure risk in 2009. Building on this effort, the WSCC and WGCC have come together to develop the *Roadmap to a Secure & Resilient Water Sector*. The roadmap content is the result of a series of conference calls and one workshop held by members of the CIPAC Water Sector Strategic Planning Working Group. For more information on the roadmap development process, please refer to Appendix A.

Figure 1.1 Examples of Security Partners in the Water Sector



Purpose

The purpose of the roadmap is to establish a strategic framework that:

- Defines a consensus-based strategy that articulates the priorities of industry and government in the Water Sector to manage and reduce risk.
- Produces an actionable path forward for the WGCC, WSCC, and security partners to improve the security and resilience of the Water Sector over the near term (1-2 years) and mid term (3-5 years).
- Directly guides new product development (e.g., EPA can use the roadmap to guide fiscal year (FY) 2010 work planning and FY 2011 budget formulation).
- Creates a shared understanding of priorities to avoid unpleasant surprises, collectively advocate Sector priorities, and recognize institutional constraints and different accountabilities.
- Encourages extensive engagement among all key stakeholders to strengthen public-private partnerships and accelerate security advances throughout the Water Sector.

Top Priorities

To assist the Water Sector in meeting its *Sector-Specific Plan* vision and goals, contributors established priorities to ensure that the most pressing and urgent needs are addressed in a timely and efficient manner. The Working Group has set three top priority activities out of 25 needed activities (listed in Appendix B) identified by roadmap workshop participants. The Working Group established the following criteria for selecting priorities. Priority activities should:

- Result in a significant and needed contribution to the Water Sector's vision and goals.
- Have a high probability of success within a reasonable timeframe; near term (1-2 years) or mid term (3-5 years).
- Be measurable in its effect on reducing risk.
- Consider the *Water Sector Coordinating Council Strategic Roadmap* (for a crosswalk of CIPAC priorities with WSCC priorities, see Appendix C). [3]
- Fall within each stakeholder's capabilities (e.g., resources, authorities, countervailing drivers).

Scope

The scope of the roadmap security and resilience activities encompasses:

- **Prevention, detection, response, and recovery**
- **Water and wastewater infrastructures**
- **All hazards, such as natural disasters, economic crises, and intentional physical and cyber attacks**
- **Top-priority issues for the WSCC and GCC**
- **Five-year time frame**

The contributors to this roadmap believe these top priority actions must be pursued to mitigate the most significant risks in the Water Sector: natural events (e.g. water quality & quantity impacts from floods, hurricanes, earthquakes, ice storms, pandemic flu, and other catastrophes depending on geographic location); economic issues (e.g., money constraints, lack of adequate resources planning, and uncontrolled growth depletes resources); and cyber events.

To be successful, each activity will need the support of both the WSCC, WGCC, and security partners. If achieved, these activities together will strengthen the Sector's ability to plan for effective response and recovery, maintain resilience during a calamitous event, and garner support for both disaster and risk mitigation cost recovery. The top priority activities are listed below.

Top Priority: Develop templates for detection, response, and recovery plans

Benefit: Improved decision making for all utilities to quickly and accurately determine the effectiveness and efficiency of their detection, response, and recovery plans and take actions to improve them.

Most Aligned with SSP Goals & Objectives: Recognize and reduce risks in the Water Sector, improve identification of potential threats (Goal 2, Objective 3); Maintain a resilient infrastructure, identify and implement key response and recovery strategies (Goal 3, Objective 3).

Lead: WSCC

Co-Lead: WGCC

Partners: CIPAC Workgroup on Water Sector Preparedness, Emergency Response, and Recovery; state drinking water primacy agencies; DHS

Results Expected: Near term (1-2 years)

Description/Application: Water utilities are confronted with an array of tools which can assist, or purport to assist, the utility in detecting, responding to, and recovering from an incident—whether a natural disaster or a human-induced event. Many utilities lack the resources to sift through these tools to identify the most relevant and useful applications. Also, some of these tools, though extremely informative, exist in a format and size which can pose a challenge for many utilities. Templates (e.g., checklists) that allow for tailoring such tools to a utility's unique conditions can provide decision makers with a way to assess risks, define costs, choose appropriate actions, and determine the effectiveness and efficiency of their plans. In the mid term (3-5 years), software tools, based on the templates, have the potential to automate and further simplify the utility's decision-making process as they continue to update and improve their plans.

Top Priority: Update emergency response plans

Benefit: Increased potential for utilities to withstand and recover quickly from a catastrophic event by updating emergency response plans to address current needs and incorporate lessons learned.

Most Aligned with SSP Goal & Objective: Maintain a resilient infrastructure, identify and implement key response and recovery strategies (Goal 3, Objective 3).

Lead: WSCC

Co-Lead: WGCC

Partners: state drinking water primacy agencies; AMWA; AWWA; AwwaRF; NACWA; NAWC; NRWA; WEF; WERF; DHS; state public utility commissions

Results Expected: Near term (1-2 years)

Description/Application: In accordance with the Features of an Active and Effective Program, emergency response plans should be updated on a regular basis to reflect changes in the understanding of risk, as defined in large part by new threats, vulnerabilities, and consequences. Periodic review and revision of an emergency response plan can also identify weak and unworkable contingencies within the plan. Furthermore, this process can help utilities comply with NIMS requirements and therefore qualify for protective program funds dispersed by DHS. Ongoing efforts by state drinking water primacy agencies can assist small drinking water utilities as they design, implement, and update their emergency response plans.

Top Priority: Increase public and political understanding of the impact of denial-of-service to facilitate rate recovery of resiliency and continuity initiatives

Benefit: Increased success and funding available for a utility's security and resilience program by raising the value of water among public officials, investors, and the communities served.

Most Aligned with SSP Goals & Objectives: Maintain a resilient infrastructure, emphasize continuity of drinking water and wastewater services as it pertains to utility emergency preparedness, response, and recovery planning (Goal 3, Objective 1).

Lead: WSCC

Co-Lead: WGCC

Partner: State drinking water primacy agencies; CIPAC Consequence Management Workgroup; DHS; state public utility commissions

Results Expected: Near term (1-2 years)

Description/Application: Today, the U.S. population benefits from a "hidden infrastructure" built with investments made over several decades. As a result, residents and public officials tend to undervalue water and wastewater services. Catastrophic events, such as hurricanes, ice storms, and earthquakes can impair, contaminate, or destroy critical infrastructures, with the costs of addressing such damage in many instances reaching the millions of dollars. Utilities often must seek the approval of public commissions or investors to fund new risk reduction efforts or to recover incurred emergency-related costs. Education and outreach activities that help utilities gain access to public officials and consumers and educate them on the real value of water and wastewater services—as well as the consequences of impaired or lost service—can overcome a general lack of awareness and garner support for both disaster and risk mitigation cost recovery. This effort can build on existing initiatives, such as those under way by state drinking water programs.

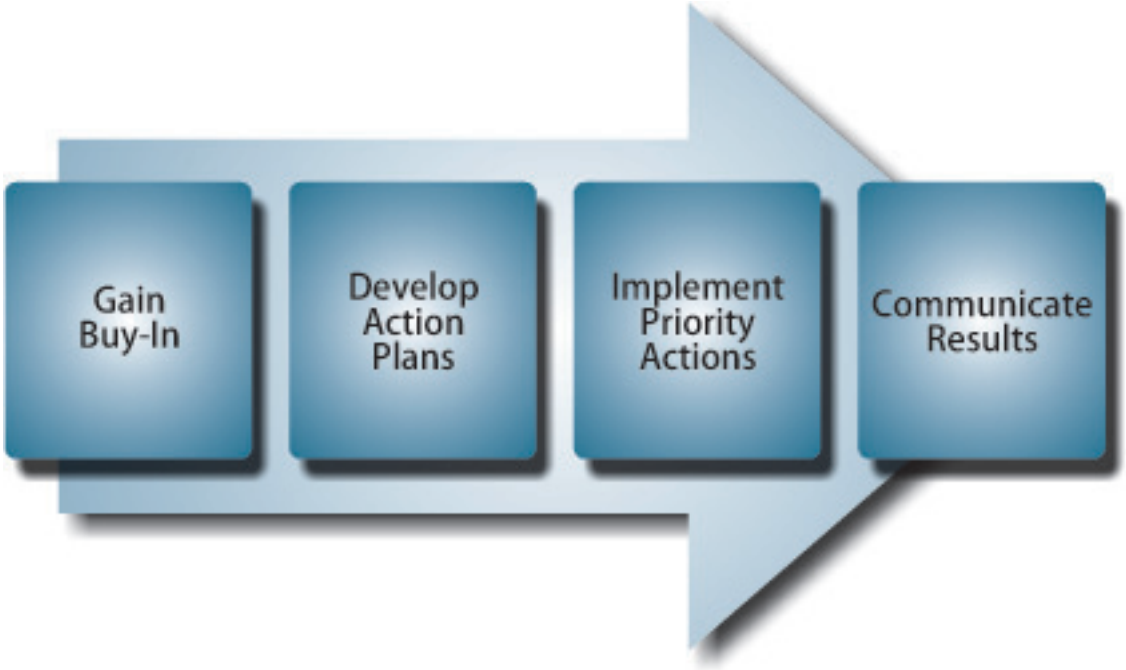
Implementation

The *Roadmap to a Secure & Resilient Water Sector* is a living document. By working together to develop this roadmap, the Sector has leveraged a broad range of operational and infrastructure protection experience to identify the most pressing Sector needs and prioritize actions that industry and government can take to begin immediately enhancing water security and resilience. While Water Sector members recognize that a major infrastructure disruption—whether deliberate, natural, or accidental—may prompt changes in priority, they believe it provides a sound and actionable path forward. Figure 3.1 outlines the main roadmap implementation steps.

Gain Buy-In

The Working Group will engage security partners to gain buy-in on roadmap priorities and motivate leaders to step-up and take action. Priorities will be shared with the CIPAC R&D Working Group to inform their efforts as they work to identify and address R&D gaps in the Sector. Priorities will also be coordinated with the CIPAC Water Sector Preparedness, Emergency Response, and Recovery Workgroup, the CIPAC Consequence Management Workgroup, and others as needed.

Figure 2.1 Roadmap Implementation Process



Develop Action Plans

Water Sector leads will collaborate with their industry and government partners to develop action plans for implementing the priorities outlined in this Roadmap.

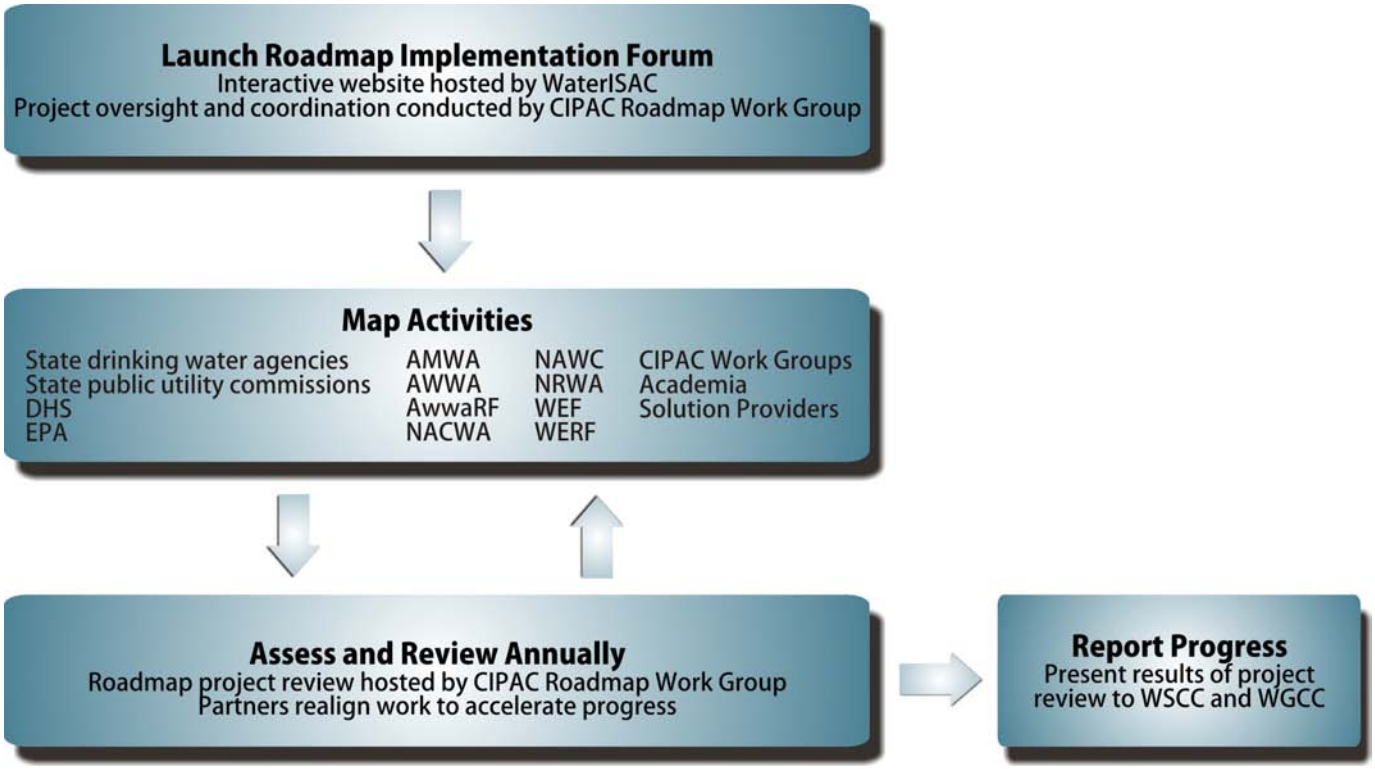
Implement Priority Actions

Water Sector leads and partners will execute the plans, assess progress, make necessary adjustments, and deliver tangible results. Figure 2.2 outlines the main steps for tracking and updating progress.

Communicate Results

Water Sector leads will develop a communication strategy that encourages active stakeholder participation and informs the public and Water Sector security partners on progress. Leads should take into account and make use of the communications capabilities available on the Water Information Sharing and Analysis Center (WaterISAC)—the Water Sector's official communication arm—as they develop and execute this strategy. When success is achieved, the results will be promoted to facilitate widespread application throughout the United States.

Figure 2.2 Tracking and Updating Progress



Appendix A. Roadmapping Process

The *Roadmap to a Secure & Resilient Water Sector* was developed according to the process shown in Figure A.1 and described below.

Figure A.1 Roadmap Development Process

Form CIPAC Water Sector Strategic Planning Working Group

In November 2008, the Strategic Planning Working Group established itself under the CIPAC framework.

Set Priority Criteria

The Working Group conducted a series of conference calls to design the roadmap framework and establish criteria for selecting the top priorities for the Water Sector.

Identify Top Priorities

On March 3, 2009, the Working Group held a CIPAC Strategic Roadmapping Workshop in Washington, D.C. During the workshop, 14 representatives from the Water Sector, including Working Group members, owners and operators, state representatives, associations, and subject matter experts, identified the scenarios that create the highest risk to the Water Sector and established the top priorities to improve the security and resilience of critical infrastructures.

Present Priorities to WGCC, WSCC, and Joint CIPAC Committee

On March 4, 2009, Working Group members discussed the draft priorities with their respective coordinating councils. The Working Group Co-Chairs then presented the priorities identified during the workshop to the Joint CIPAC to gain further insight.[5] The workshop results were published in the Working Group's *Strategic Roadmapping Workshop*.[6]

Review Draft Priorities

The Roadmapping Workshop presentation and report were shared among workshop participants, the Working Group, and other subject matter experts to confirm the meeting findings and further refine them.

Prepare, Review, and Publish Roadmap

The draft strategic roadmap was developed and circulated among workshop participants, the Working Group, and other key stakeholders for added insight and clarification. The comments of all reviews have been integrated into this final roadmap document.

Appendix B. Summary of Water Sector Risks & CIPAC Priorities

Greatest Risks to the Water Sector

On March 3, 2009, the Working Group held a CIPAC Strategic Roadmapping Workshop in Washington, D.C. During the workshop, 14 representatives from the Water Sector, including Working Group members, owners and operators, state representatives, associations, and subject matter experts, discussed the key concerns, trends, and drivers that will affect the Sector over the next five years.

Participants identified and prioritized the scenarios that create the highest risk to the Water Sector (Table B.1). A single risk event can cause multiple effects. For example, a hurricane (most significant risk) can cause power outages, communication problems, and work force issues (medium risks). However, work force issues can escalate to high risk, especially when a plant operator is unable to reach the water treatment plant because flooding or debris make the roads impassable.

Finally, the group identified and prioritized the actions needed to mitigate the most significant risks (Table B.1) and determined the appropriate time frames to produce results (Table B.2).

Priority Risk Mitigation Needs

Workshop participants identified 25 needed activities to significantly reduce risk in the Water Sector. To prioritize these activities, the most pressing and urgent needs were selected according to the following criteria. Priority activities should:

- Result in a significant and needed contribution to the Water Sector's vision and goals.
- Have a high probability of success within a reasonable timeframe; near term (1-2 years) or mid term (3-5 years).
- Be measurable in its effect on reducing risk.
- Consider the *Water Sector Coordinating Council Strategic Roadmap*.
- Fall within each stakeholder's capabilities (e.g., resources, authorities, countervailing drivers).

To be successful, each activity will need the support of both the WSCC, WGCC, and security partners. Certain tasks are appropriate for the WSCC to lead and are indicated in green. Tasks appropriate for the federal government to lead are indicated in black, while state-led activities are in blue text.

The WSCC and WGCC established three levels of priority activities as a template for action. Top priorities represent the most pressing needs, and industry and government must immediately step forward and initiate the work on these activities. As resources become available, Water Sector leads will collaborate with their industry and government partners to pursue additional priorities as deemed necessary and urgent at that time.

Table B.1 Scenarios that Create the Greatest Risk to Water and Wastewater Infrastructures

Most Significant Risks

- Natural events (e.g., water quality & quantity impacts from floods, hurricanes, earthquakes, ice storms, pandemic flu, and other catastrophes depending on geographic location)
- Economic issues (e.g., money constraints, lack of adequate resources planning, and uncontrolled growth depletes resources)
- Cyber events

High Risks

- Poor communication from federal to local level (e.g., Sector lacks coherent strategy to communicate priorities to boots on the ground)
- Competing priorities (e.g., utilities tend to focus on point-source events, while citizens and government tend to pay more attention to events with wide-area or national impacts)
- Lethargy—business as usual
- Lack of adequate resource planning
- Insider attacks
- Efforts at local utility level are not being recognized further up the chain, which may result in a lack of critical support and ineffectively targeted regulations

Medium Risks

- Public confidence
  - Bad news media event (e.g., individual point source event could affect confidence in the entire Sector)
  - Overemphasis on security could cause potential decline in public confidence
- Power outages
- Declining workforce due to lack of interest and desire for simple work
- Lack of adequate communication systems for local first responders
- Radiological attacks
- Chemical attacks
- Improvised nuclear devices
- Improvised explosive devices
- Political decisions constrained by difficulties in scaling the big picture down to local issues
- The meaning of security differs among utilities
- Poor attitudes (e.g., apathy, public takes water for granted, me-first approach limits collaboration)

Table B.2 Actions Needed to Mitigate Risks in the Near Term (1-2 years)

Top Priority

- Develop templates for detection, response, & recovery plans (Lead: SCC)
- Update emergency response plans (Lead: SCC)
- Increase public & political understanding of the impacts of denial-of-service (DOS) to facilitate rate recovery of resiliency and continuity initiatives (Lead: SCC)

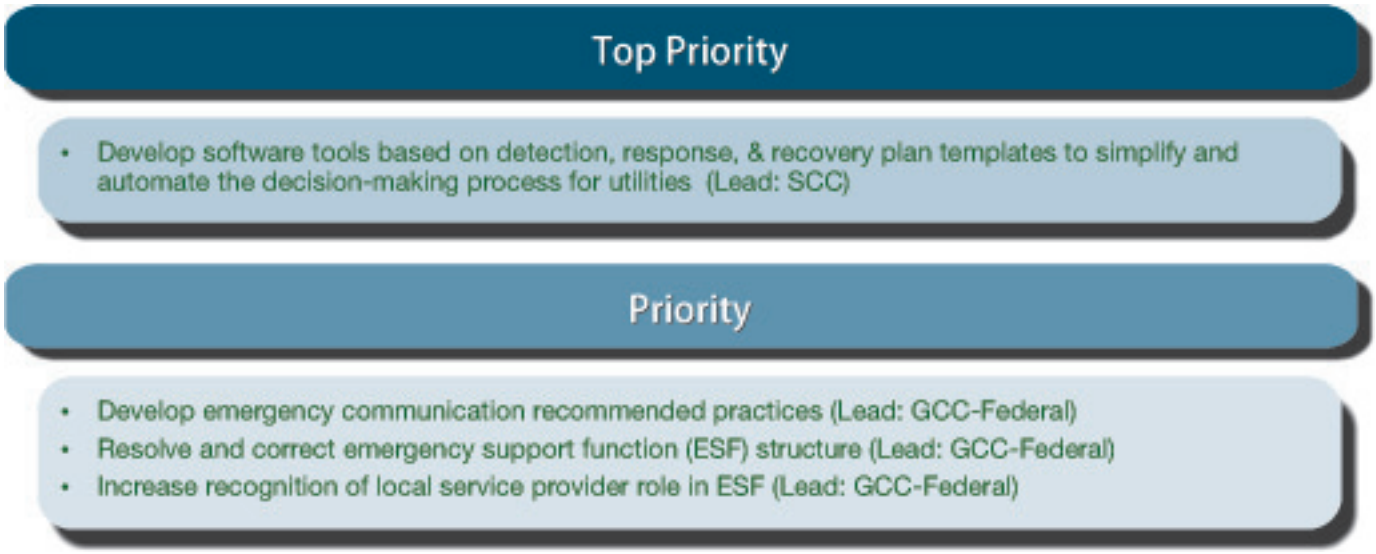
High Priority

- Conduct cyber training workshops (e.g., basic) (Lead: SCC-GCC-Federal)
- Provide technical assistance to utilities (Lead: SCC)
- Exercise emergency response plans (Lead: SCC)
- Update mutual aid agreements (Lead: SCC
- Enhance communication and coordination efforts—NIMS (Lead: GCC-Federal)
- Provide utilities with tools to articulate the consequences of DOS (Lead: GCC-Federal)
- Develop emergency communication lessons learned (Lead: GCC-Federal)
- Develop and conduct first-responder training (e.g., tabletop exercises) (Lead: GCC-State-Federal)
- Develop and deploy battle-tested communications (Lead: GCC-federal)
- Educate decision makers & public on multiple benefits of security (e.g., health, infrastructure, economic growth) (Lead: GCC-State)

Priority

- Update vulnerability assessments at regular intervals (Lead: SCC)
- Help states understand how best to target funds by developing a means for utilities to justify resiliency initiatives (Lead: SCC)
- Maximize repsone to metrics survey (Lead: SCC)
- Integrate WaterISAC's capabilities into training, resources, etc., whenever possible (Lead: SCC)
- Raise understanding of interdependencies (Lead: GCC-Federal)
- Provide training, resources, & planning guidance on business continuity/continuity-of-operations plans (Lead: GCC-Federal)
- Update incident command system—NIMS (Lead: GCC-Federal)
- Develop emergency communication lessons learned (Lead: GCC-Federal)
- Encourage stakeholders to consider state primacy agencies as potential allies or resource (Lead: GCC-State)

Table B.2 Actions Needed to Mitigate Risks in the Mid Term (3-5 years)



Appendix C. Crosswalk of CIPAC Priorities with WSCC Priorities

Many of the priorities identified in this roadmap align with the priorities identified in the *WSSC Strategic Roadmap*. In Table C.1, the blue boxes contain *WSCC Strategic Roadmap* priorities, while the bullets show the CIPAC priorities from this roadmap that most align with them.

Table C.1 Crosswalk of CIPAC Priorities with WSCC Priorities

Align security partner (i.e., EPA, DHS) priorities with water sector needs

- Increase public & political understanding of the impact of DOS to facilitate rate recovery of resiliency and continuity initiatives
- Educate decision makers & public on multiple benefits of security (e.g., health, infrastructure, economic growth
- Help states understand how best to target funds by developing a means to justify resiliency initiatives

Develop strategy for managing government (i.e., EPA, DHS) workload

- Enhance communication and coordination efforts—NIMS

Engage with local emergency managers

- Update emergency response plans (ERPs)
- Exercise ERPs
- Develop and conduct first-responder training (e.g., tabletop exercises)
- Update mutual aid agreements

Maximize response to CIPAC Metrics survey

- Maximize response to CIPAC Metrics survey

Promote to government a flexible and scalable approach to Risk Analysis and Management for Critical Asset Protection (RAMCAP)

- Provide utilities with tools to articulate the consequences of DOS

Provide guidance on business continuity/continuity-of-operations planning in the Water Sector

- Provide training, resources, & planning guidance on business continuity/continuity-of-operations plans

Provide guidance on consequence management plan detection of contamination protocols

- Provide utilities with tools to articulate the consequences of DOS

Provide guidance on water and wastewater utility responder communications

- Develop emergency communication lessons learned

Appendix D. Acronyms

AMWA	Association of Metropolitan Water Agencies
ASDWA	Association of State Drinking Water Administrators
AWWA	American Water Works Association
AwwaRF	AWWA Research Foundation
CIPAC	Critical Infrastructure Partnership Advisory Council
CWS	community water system
DHS	U.S. Department of Homeland Security
DOS	denial of service
EPA	U.S. Environmental Protection Agency
ERP	emergency response plan
FEMA	Federal Emergency Management Agency
ISAC	Information Sharing and Analysis Center
NACWA	National Association of Clean Water Agencies
NAWC	National Association of Water Companies
NIMS	National Incident Management System
NIPP	National Infrastructure Protection Plan
NRWA	National Rural Water Association
RAMCAP	Risk Analysis and Management for Critical Asset Protection
SSP	Sector-Specific Plan
WARN	Water/Wastewater Agency Response Network
WEF	Water Environment Federation
WERF	Water Environment Research Foundation
WGCC	Water Government Coordinating Council
WSCC	Water Sector Coordinating Council

Appendix E. References

1. DHS and EPA. *Water Critical Infrastructure and Key Resources Sector-Specific Plan* as input to the *National Infrastructure Protection Plan*. Washington, DC: EPA, May 2007. http://www.epa.gov/safewater/watersecurity/pubs/plan_security_watersectorspecificplan.pdf.
2. EPA. *Water Security Initiative: Interim Guidance on Developing Consequence Management Plans for Drinking Water Utilities*. Washington, DC: EPA, October 2008. http://www.epa.gov/safewater/watersecurity/pubs/watersentinel_mangt_strategy.pdf
3. WSCC Strategic Planning Working Group. *Water Sector Coordinating Council Strategic Roadmap*. October 2008. http://www.nawc.org/policy-issues/utility-security-resources/Final%20WSCC%20Strategic%20Roadmap_web.pdf
4. EPA. *Key Features of an Active and Effective Program*. EPA-817-F-08-005. Washington, DC: EPA, October 2008. http://cfpub2.epa.gov/safewater/watersecurity/features.cfm#f6
5. CIPAC Water Sector Strategic Planning Working Group. *Crosswalk and Preliminary Framework*. March 4, 2009.
6. CIPAC Water Sector Strategic Planning Working Group. Workshop results, Strategic Roadmapping Workshop. March 11, 2009.

For more information:

William L. Komianos, CIH, CSP
Water Sector Coordinating Council Vice-Chair
American Water
Sr. Director, Operational Risk Management
(856) 309-4519
William.Komianos@amwater.com

David Travers
Office of Water, U.S. Environmental Protection Agency
Director, Water Security Division
(202) 546-4638
Travers.David@epamail.epa.gov

Cade R. Clark
National Association of Water Companies
Director of State Relations
(202) 466-3331
Cade@nawc.com